

REMARKS/ARGUMENTS

Claims 1 – 13 are currently pending in the application.

As suggested by the Examiner in the Office Action, claims 1 – 7 and 12 – 13 have been amended to change “Ashitaba” to ---ashitaba---.

The Specification has been amended to correct two typographical errors. No new matter has been added.

Claims 1 – 13 are rejected under 35 U.S.C. §103(a) over WO 98/58656 to Bank, et al. (hereinafter, “Bank”) in view of: Crawford, et al., *J. Agric. Food Chem.* (1990), vol. 38, pages 2169 – 2175 (hereinafter, “Crawford”); or “Medicinal Plants in the South Pacific,” WHO Regional Publications (1998) Western Pacific Series No. 19, page 149 (hereinafter, “Medicinal Plants”); or Torres, et al., *J. Agric. Food Chem.* (1987), vol. 35, pages 921 – 925 (hereinafter, “Torres”); or Chang, et al., *J. Chromatogr. B.* (2000), vol. 760, pages 227 – 235 (hereinafter, “Chang”).

Claim 1 of the present disclosure recites, “A **flavor deterioration inhibitor or an inhibitor for the generation of deterioration smell of citral or a citral-containing product, which comprises an extract obtained by extracting ashitaba, avocado, common plantain, oriental senna, hawthorn, semi-fermented tea leaves or fermented tea leaves** with water, a polar organic solvent or a mixture thereof; provided that there is

excluded an inhibitor for the quality deterioration of a coffee liquid extract comprising an extract of semi-fermented tea leaves or fermented tea leaves.” [emphasis added].

Likewise, claims 2 – 7 and claims 12 – 13, which are also independent claims, provide an inhibitor comprising an extract that is “obtained by **extracting ashitaba, avocado, common plantain, oriental senna, hawthorn, semi-fermented tea leaves or fermented tea leaves.**” [emphasis added]

Bank discloses citrus-flavored compositions having a water-soluble plant extract as a stabilizing agent (page 3, lines 6 – 7), particularly plant extracts having caffeic acid derivatives, such as rosmarinic acid (page 3, lines 10 – 12). However, only the stabilizing effects of water-soluble extracts containing rosmarinic acid are demonstrated experimentally in Bank (see, e.g., “Example 1” on page 9 and “Example 2” on page 10). Indeed, although Bank broadly discloses other active agents in water-soluble plant extracts throughout the disclosure, she expressly discloses that, for her invention “...the **flavor stabilizing effect of plant extracts comprising rosmarinic acid is *surprisingly and unexpectedly* superior to that of other stabilizing agents.**” (page 3, lines 22 – 24) [emphasis added]. For example, the stabilizing effects of other caffeic acid derivatives, or of polyphenols, are not otherwise supported or confirmed experimentally in Bank.

The absence of such support is a critical deficiency in Bank, as not every caffeic acid derivative effectively acts as a stabilizer to prevent deterioration of citral flavor. Indeed, the present application provides experimental data that chlorogenic acid (a caffeic

acid derivative), rutin (a polyphenol), and L-ascorbic acid (as an anti-oxidant), did *not* achieve the effect of significantly preventing deterioration of citral flavor when added to lemon-flavored drinks, when measured as generated amounts of *p*-cresol or *p*-methylacetophenone (see “Test Example 36” and Table 36 on pages 60 – 61, paragraphs [0463] to [0465]) and sensory evaluations (see “Test Example 37” and Table 37 on pages 61 – 62, paragraphs [0466] to [0470], as well as “Test Example 38” and Table 38 on pages 63 – 64, paragraphs [0471] to [0476]).

Thus, Bank’s disclosure incorrectly implies that not only the rosmarinic acid extract, but also plant extracts containing other caffeic acid derivatives will also achieve the effect of inhibiting citral flavor deterioration. However, as shown by data from the present application, at least one caffeic acid derivative, chlorogenic acid, did not demonstrate the effect. The result of this is that the broad, general disclosures in Bank do not render obvious the claims in the present invention, which specifically recite an inhibitor comprising an extract that is “obtained by **extracting ashitaba, avocado, common plantain, oriental senna, hawthorn, semi-fermented tea leaves or fermented tea leaves.**”

As acknowledged in the Office Action, Bank is silent as to the use of an extract obtained from ashitaba, avocado, common plantain, oriental senna, hawthorn, semi-fermented tea leaves or fermented tea leaves. **Crawford** is cited in the Office Action for teaching the presence of caffeic acid (and traces of chlorogenic acid) in oriental senna (*Cassia obtusifolia*); however, this disclosure fails to address the deficiencies in Bank

(discussed above) so as to disclose or suggest the features in claims 1 – 7, 12 and 13.

Likewise, **Medicinal Plants** is cited in the Office Action for disclosing the presence of caffeic acid and chlorogenic acid in common plantain (*Plantago major* L.)(p. 149); however, this disclosure fails to supplement the deficiencies in Bank, above, such that the combination discloses or suggests the features in claims 1 – 7, 12 and 13. **Torres** discloses the presence of caffeic acid in avocado (*Persea americana*) (p. 924); however, Torres also fails to supplement the deficiencies in Bank so as to disclose or suggest the features in claims 1 – 7, 12 and 13. Finally, **Chang** discloses chlorogenic acid in the fruits of hawthorn (*Crataegus pinnatifida*) (p. 228), but fails to supplement the deficiencies in Bank such that their combination discloses or suggests the features of claims 1 – 7, 12 and 13.

Moreover, since chlorogenic acid and rutin as polyphenols do not achieve the effect of inhibiting deterioration of, the present claims 1 – 7, 12 and 13 are not obvious over Bank, taken alone or in combination with Crawford, Medicinal Plants, Torres, and/or Chang.

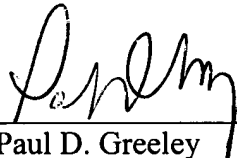
Further, Applicants respectfully submit that the present application provides experimental data supporting that the flavor deterioration inhibitors claimed in the present application can prevent the generation of *p*-cresol, which is an off-flavor substance other than *p*-methylacetophenone, which is not disclosed in Bank.

For the same reasons as provided for the independent claims, dependent claims 8 – 11 are not rendered obvious over Bank, taken alone or in combination with Crawford, Medicinal Plants, Torres, and/or Chang.

Therefore, for the reasons above, Applicants submit that claims 1 – 13 are not obvious over Bank, taken alone or in combination with Crawford, Medicinal Plants, Torres, or Chang. Accordingly, Applicants respectfully request reconsideration and withdrawal of the §103(a) rejections thereto, and passage of claims 1 – 13 to allowance.

Respectfully submitted,

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Date



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